

POOR ORIGINAL

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT CHIEF OF STAFF, INTELLIGENCE
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Engineer Support of a Breakthrough of Tank (Mechanized) Formations

The rich experience of the patriotic war clearly underlines that the success of tank and mechanized formations in modern warfare depends to a great degree on their mobility. Unfavourable terrain, the availability of engineer troops on their own side or that of the enemy, craters from explosions, the damage to bridges, roads, and particularly, moving on a large scale may deny tank (mechanized) formations their greatest asset - mobility. In order to secure for tank (mechanized) formations high mobility and striking power, assistance by engineer troops and ~~the~~ close cooperation with them is required.

Several examples of engineer support of breakthrough operations by tank and mechanized formations on the western front ~~with the following~~ ~~and the conclusions drawn from them are quoted below.~~ These conclusions refer in the main to engineer support of tank and mechanized formations during the period of the preparation of the operations and the initial breakthrough. These conclusions do not claim to be all-inclusive nor should they serve as prototypes, but at the same time they show themselves as material which is well worth study by generals and officers of all arms.

The preparation and maintenance of roads for a breakthrough of Tank (Mechanized) formations: In the preparatory period tank and mechanized formations usually assemble under cover, the tanks are fitted out with supplementary equipment and prepare for the breakthrough. Engineer support for this requires from the engineer troops the work of camouflaging the equipment, the erasing of tracks made by the machines and the preparation of false concentration areas.

The movement of tanks into assembly and departure areas requires the preparation and maintenance of roads.

In order to assure movement by tank and mechanized formations roads have to be maintained. Frequently all the work of maintenance consists of preparing passages through our own and enemy mine fields, through prepared obstacles, barbed wire entanglements, demolished culverts, and further to assist tanks in overcoming other artificial or natural ob-

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stacles (ravines, escarpments, swampy areas etc.)

Only a small portion of this work can be done by the sappers organically assigned to the tank and mechanized formations. In the majority of instances the work will have to be done by specially assigned sapper subunits.

In order to assure timely and complete engineer security and to achieve full cooperation between the sappers and tankers it is absolutely necessary to assign the engineers in good time. In the Rzhev-Zubtsov operation engineer support to the tank formations was only assigned when these were preparing to enter the breakthrough. As a result of inadequate reconnaissance and engineer preparation under conditions of rainy weather, out of 163 tanks only 70 reached the forward line of the enemy defences.

Experience has shown that the preparation of roads is of prime importance for the breakthrough of tank (mechanized) formations.

In a tank corps roads are usually prepared for the leading brigade, one road for wheeled transport and two roads for tanks.

The selection and preparation of march-routes from the departure position to the line where the passages have to be prepared through the forward mine fields will be done during this preparatory period.

The roads will be marked out and given a symbol. Routes for columns will be indicated by stakes two meters high, the distance between stakes will be 10 to 50 meters, and the width of the marked zone will be 30 to 50 meters, for this work motorized rifle units will be assigned to the sappers.

Timely preparation of the materials for the construction of crossings and small bridges across trenches, brooks, cuttings and other obstacles will be prepared in the forward depots.

Besides this, at each small bridge or crossing on the main route of the march, there will be assembled emergency material for the repair and re-building of the crossings (small bridges), particularly along the tank routes during the time of the crossing by the tanks.

When our troops start to advance a detachment to facilitate move-

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ment will follow the forward units. For this it is necessary to employ available army means - roads if the direction of movement of the tank corps coincides with its own.

In this situation the work of the detachments will lead to wrong emphasis and overloading of the roads, and if necessary to the reinforcement of the sappers who are repairing the army roads.

Before leading a tank corps into the breakthrough there will be established (with the permission of the Army's Chief Engineer) a control post at the main bridges across rivers to maintain order and to safeguard the bridges.

The corps sapper battalion (the organic or an attached one) will be divided in the tank column for engineer support in the depth of the enemy's defences.

The Corps Engineer should communicate in time with the Chief Engineer in whose area the corps will be operating to receive from him information concerning the routes and the bridges lying on them - which routes will be restored. He should also receive a map showing our own and the enemy's defences.

The preparation of passages through our own mine fields: The experience of the patriotic war has shown that the proper planning of passing our tanks through our own mine fields and the proper cooperation for that between the tankers and sappers is of the utmost importance. As an outstanding example can be quoted again the Rzhev-Zubtsovka operation in which 16 tanks were lost on enemy mines but 19 were lost on our own.

According to the experience of the western front it was found necessary to provide three to four passages for each brigade (regiment), that is, according to the number of tank mine sweepers or reconnaissance tanks. The width of a passage in our own mine fields in the forward area, as well as in the depth, should be no less than 20 to 30 meters. The passages prepared and maintained for tanks will later be used for the movement of artillery and all types of transport; for horse transport it is necessary to prepare separate routes.

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The passages through the minefields in the forward area and in the near rear will be cleared on the instructions of the reconnaissance commander two to three days prior to the start of the operation. The divisional brigade engineers, as well as the commanders of those engineer units responsible for the preparation and maintenance of the passages in the given sector will participate in the reconnaissance organized by the commander of the tank or all arms formation.

The placing of the passages is decided on the spot and will generally be in the direction of the columns and the line to be met. In order to construct the passages the commander of the engineer battalion (company) will start work immediately. Passages through the mine fields of the near rear will be opened up two to three days prior to the attack, and those in the forward area on the day preceding it.

For the work of opening passages in the forward areas, besides the sappers of the tank formations, it is absolutely necessary to add the sappers of the division which is defending the area.

Guiding Tanks and Troops through the Passages in Mine Fields. When the passages are all prepared the commanders of the tank formations and units are obliged to conduct a road reconnaissance with the commanders of the tank units and tank commanders in order to lead each of them through the assigned road from the beginning through the whole passage. Here each commander of a lead unit and tank will familiarize himself with the passage with the assistance of the commandant. From the unit, guides will accompany the commanders, who, after acquainting themselves with the passages, will lead the units to the location at the appointed time.

It is advisable to send sapper-guides to accompany tanks who will accompany the lead tank from the departure position to the passage. The guides and commanders will acquaint themselves with the sector containing the passages through the mine field not later than the evening before the attack.

Guarding and Maintenance of Passages: The guarding of the passages has to be arranged for the following purposes:

- in order not to allow our tanks and troops to stray from the

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route and to prevent them from running into our own mine fields.

- to close the passages with mines in time to prevent enemy tanks from breaking through along the prepared routes.

For each road a guard detachment, consisting of two men is assigned who will have a supply of mines, who will have prepared a mined barrier which they can lay quickly ^{across} ~~along~~ the passage. The sentries have to direct the moving units and transport through the passage, to prevent hold-ups during the passage in the sector assigned to them. At the meeting line the commandant's assistant (usually a sergeant) is stationed who has to know exactly the time of arrival of each unit at the passage and he will direct them to the appropriate route. All the passages are given numbers, four to five passages are grouped in a sector, which is serviced by a platoon. The platoon commander is appointed commandant of the sector in charge of traffic through the mine field. The guard duty is performed in two shifts.

Engineer Support during the Breakthrough : The main tasks of the sappers in that period will consist of preparing the fighting courses for the tanks and the clearing of mines from passages through the enemy's mine fields.

These passages, 6 to 8 meters wide, will be prepared in time under all rules of camouflage and secrecy. The passages will be marked with signs visible from our side only on the eve of the attack. In the mine fields adjacent to roads, signs will be posted, saying, "Mined Area, do not leave road," or, even simpler, just "Mines".

In practice the preparing of passages will evolve on the mine-lifting group. Typical examples of the tasks of these groups are shown in Table 1.

Table 1Mine-Lifting GroupReconnaissance Sub-Group (mine searchers)

Task 1. The search for mines and their marking with small, camouflaged flags.

Mine-Lifting Subgroup

The destruction of the disarmed mines by using 200 g detonators or long charges.

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Task 2. Upon entering a mine field immediately give the mine-lifting sub-group a signal.

Careful marking of the passage with large flags. Collect the small flags and send them forward. The entry into a mine field as well as the readiness of a passage, has to be reported.

Task 3.

The mine destroying sub-group becomes a reserve to the mine sweeping sub-group. In case of necessity it will completely replace the latter. A rifle platoon will be detailed to provide covering fire for the working group. During the cutting of the passages through the mine-field the platoon will dispose itself on the flanks and will neutralize the fire positions which are protecting the mine field.

While the mine sweeping sub-group is searching for mines, the mine destroying sub-group will cover its work with its available means. After the mines have been disarmed and indicated the mine sweeping sub-group will move forward and will cover the work of the mine destroying sub-group while it explodes the mines. Particular importance should be paid to the fire covering of the work of the explosive group, since the success of the operation depends directly on it.

The positioning of the sappers, and their distribution among the tank (mechanized) formations and the tasks fulfilled by them will be approximately like the ones shown in Table 2 (not included in the translation - can be found on page 171 of the original).

Behind each mine sweeper there will consolidate a definite number of tanks of the 1st. and 2nd. echelon, which are to utilize the prepared passages through the mine field (4 to 6 tanks of the 1st. echelon per passage).

Behind each mine sweeper or reconnaissance tank, at a distance of 200 meters, there will follow a destroyer group (frequently two groups) consisting of a reconnaissance sub-group and a mine lifting sub-group.

Their tasks:

1. The group will look after the activity of the mine sweepers, when the mine sweeper reaches the mine field the superior of the group

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will give a previously agreed upon signal to the commander of the tanks of the first echelon that the mine field has been reached so that the tanks may prepare for the movement through the passage.

2. The group, under the covering fire of the manoeuvring tanks will move quickly by bounds towards the discovered mine field and will mark the passage with small flags and at the same time clean up the passage.

3. The superior of the group will leave two sappers behind at the entrance to the passage and will give the signal to the tanks of the first echelon permitting them to begin passing through the passage in the previously arranged order.

After having completed these assignments the group will, at an increased speed, follow the reconnaissance tanks.

The second group, without stopping, will follow the mine sweepers and will observe their action. In the event that another mine field is encountered, this group will act as is described in paragraph 3, while the first group will continue its uninterrupted movement with the tank mine sweepers.

When minor obstacles are encountered the reserve sappers will construct crossings from previously prepared material or from material available on the spot, usually no less than two crossings will be prepared.

In the absence of mine sweepers in front of the first echelon there will move a tank reconnaissance and demolition group, in that order. In the event that a minefield is encountered by the tank reconnaissance, the destroyer group, after having given a signal to the tanks following behind, will proceed quickly to prepare a passage by the use of explosive devices.

The engineer escort of a tank corps is graphically shown in Table 3 (not included in translation - can be found on page 172 of the original).

In this event, up to a platoon of sappers will be assigned to the reconnaissance group, which will be equipped with 3 to 4 mine sweepers,

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6 to 8 prodding irons, 20 km. of explosive, incendiary tubes, which can be ignited with the modern simplified pull fuse. (M U V).

The movement support detachment will consist of 1 to 2 companies, with 1 to 6 trucks (with spare clamps, rods, nails, rope, and marking equipment). The movement support detachment will follow immediately behind the forward detachments. In the brigades of the second echelon, under average terrain conditions, the road support detachments may be omitted. For small and simple work it is advisable to have at the head of the main column a company of motorized infantry with a squad of sapper instructors.

All the work of river crossings, bridges, and crossings will be done by sappers under the fire cover of the motorized infantry and tanks. In the first instance locally available material will be used and only in its absence will the reserve be touched, for which timely provision should be made. The reconnaissance group as well as the destroyer group should be carried in armoured personnel carriers or tanks.

In practice the use of tanks-borne sappers did not justify itself because the sappers usually had to leave the column in the fulfillment of their duties.

The Tasks of Engineer Support in the Operational Depth : The main tasks of engineer units and sub-units operating with tank and mechanized formations are:

- the securing of a high rate of movement along the mine cleared paths and defences, construction of by-passes, repair and construction of roads and bridges.
- the construction of mine and explosive defences in cooperation with the armoured personnel for the fortification of the captured boundary.
- to obstruct enemy routes of withdrawal with mine and explosive obstacles.
- to protect with mine and explosive obstacles the main tank approaches into the area of concentration.

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The Planning of Engineer Support of Advancing Tank (Mechanized) Formations : The plan of engineer support will depend on the depth of all operations (the depth of the task assigned to the tank-mechanized formations).

In the plan, provision will be made for : the tasks set for the engineers, the approximate estimate of the required work and the distribution of the available forces and materials. Prior to the planning the importance of the fulfillment of the tasks of the formations will have to be ascertained.

The planning may be confined to separate routes showing the likely obstructions on them, an estimate of the work required to remove the obstacles, the necessary personnel and equipment for it, by whom and when the work was to be done.

The plan will be entered on a map: the march route will be shown according to the battle course of the brigade (regiment); the intersecting obstacles will also be entered. When the reconnaissance reports have been received the character and size of the obstacles will be marked on a large-scale map and the decision will be made by which method these will be overcome. Then an accounting has to be made of the necessary materials and from where these can be obtained; which can be taken on the spot and which will have to be moved up. Knowing the march and subsequent tasks of the troops, the estimate work is divided in days per route, according to the source of the materials. Carefully worked out has to be the sequence of what has to be loaded on the transports.

As a result of the calculation the composition of each support detachment for each route of the march is established as well as the number of trucks and the amount of material required.

As a graphic description of an outline plan for engineer support of a breakthrough by a tank (mechanized) formation can serve sketch 36 (not included in the translation - can be found on page 173 of the original).

The repair of march routes during a mobile action by tank (mechan-

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ized) formations will be planned taking into consideration all data and means at the disposal of the chief engineer. A possible form for the plan is shown in Table 1 (not included in the translation - can be found on page 174 of the original).

For a speedy forward movement of the necessary materials forward dumps will have to be established during the preparatory period. The movement support detachment will be entirely supplied from these depots until the complete breakthrough of the enemy's tactical defence.